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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,064	01/15/2002	Robert John Kopmeiners	4-16	5334

47386 7590 11/14/2006

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EXAMINER

AGHDAM, FRESHTEH N

ART UNIT	PAPER NUMBER
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2611

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/047,064

Applicant(s)

KOPMEINERS ET AL.

Examiner

Freshteh N. Aghdam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4 is/are rejected.
- 7) ☒ Claim(s) 2-3 and 5-6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 8/21/2006 have been fully considered but they are not persuasive.

Applicant's Arguments: Regarding claim 1, page 4, applicant argues that the claimed invention is not disclosed or suggested either alone or in combination by Piirainen or Bar-David "a predetermined set of symbols and, therefore, Piirainen does not disclose or suggest comparing each of the successive parts of the received signal, each part having the length of a symbol, with each of the reference symbols, yielding a detected symbol for each part of the received signal." Regarding claim 4, page 5, applicant argues that the claimed invention is not disclosed or suggested either alone or in combination by Critchlow or Bar-David "comparing each of the successive parts of the filter signal, each part having the length of a symbol, with each of the symbols from the predetermined set of symbols yielding a detected symbol for each part of the filter signal."

Examiner's Response: Regarding claim 1, the applicant fails to provide any information as what the nature of the predetermined set of symbols is neither in specification nor in the drawings, therefore, the examiner interpreted the generated symbols from the hard bit decisions as the predetermined set of symbols, wherein the detected symbols are selected out the predetermined set of symbols (Col. 16, Lines 50-54); and comparing the reference symbols and the received symbols on a symbol by

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symbol basis (Col. 16, Lines 55-62). Regarding claim 4, Critchlow discloses comparing each of the successive parts of the filter signal (i.e. output of the matched filter 24); each part having the length of a symbol, with each of the symbols from the predetermined set of symbols yielding a detected symbol for each part of the filter signal (i.e. complex correlator; Fig. 1 and 6, Blocks 74, 82, 84, and 86; Col. 9, Lines 1-7 and 45-68; Col. 10, Lines 1-2 and 43-47).

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the predetermined set of symbols and the reference symbols must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

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application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Piirainen (US 6,396,878), and further in view of Bar-David et al (US 5,623,511).

As to claim 1, Piirainen teaches a detection method using a receiver of a digital communication system for the detection of a symbol from a received signal, which signal is a selected symbol out of a predetermined set of symbols and wherein each symbol of the predetermined set is modulated according to a modulation coding scheme, wherein the method comprises generating a set of reference symbols on the basis of the predetermined set of symbols and a channel impulse response between the transmitter and the receiver; and comparing each of the successive parts of the received signal, each part having the length of a symbol, with each of the reference symbols yielding a detected symbol for each part of the received signal (Col. 13, Lines

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1-24; Col. 16, Lines 50-62). Piirainen further teaches that each symbol comprises a plurality of chips (bits) see (Col. 5, Lines 24-29). Piirainen is silent about each symbol of a predetermined set comprises a sequence of chips, wherein each chip is PSK modulated. Bar-David teaches a digital communication system that utilizes PSK modulation, wherein each symbol comprises a sequence of chips (Col. 1, Lines 18-35). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Bar-David with Piirainen in order to increase the bit rate by transmitting a number of bits (i.e. bit to symbol mapping) during a single bit duration by utilizing phase shift keying modulation scheme (Col. 1, Lines 45-50).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Critchlow (US 5,276,706), and further in view of Bar-David et al.

As to claim 4, Critchlow teaches a detection method using a receiver of a digital communication system for the detection of a symbol from a received signal (Fig. 1, means 24, 30, and 44), which signal is a selected symbol out of a predetermined set of symbols (Fig. 1, means 36) and wherein each symbol of the predetermined set is modulated according to a modulation scheme (Col. 5, Lines 17-45; Col. 9, Lines 1-7), wherein the method further comprises filtering the received signal with a filter which yields a filter signal (Col. 3, Lines 18-41; Col. 5, Lines 17-45; Col. 9, Lines 1-7; Fig. 1, means 24), wherein the filter is a matched; the filter signal is compared with the predetermined set of symbols (Col. 9, Lines 1-7) in order to detect a symbol with the highest reliability (i.e. maximum energy; Fig. 1, means 44). Critchlow is silent about

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each symbol of a predetermined set comprises a sequence of chips and each chip is PSK modulated. Bar-David teaches a digital communication system that employs a match filter for compensating for any phase shifts or amplitude distortion caused by the delay spread of the channel (which is well known in the art) by convolving the received signal with the channel impulse response (Fig. 6, means 650 and 660; Col. 12, Lines 15-22); utilizes PSK modulation, wherein each symbol comprises a sequence of chips (Col. 1, Lines 18-35). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Bar-David with Critchlow in order to increase the bit rate by transmitting a number of bits (i.e. bit to symbol mapping) during a single bit duration by utilizing phase shift keying modulation scheme (Col. 1, Lines 45-50).

Allowable Subject Matter

Claims 2-3 and 5-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Freshteh Aghdam
November 1, 2006


KEVIN BURD
PRIMARY EXAMINER